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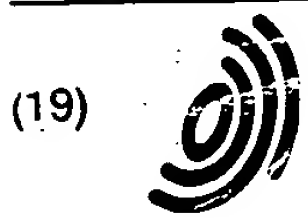
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(54) **A reaming tool for reaming bone canals**

(57) A reaming tool for reaming bone canals with a drill head which is mounted on an elongate flexible shaft which has a diameter smaller than that of the drill head and which can be connected to a rotary drive motor, wherein the drill head and shank comprise a through-bore for a guiding wire wherein the shaft at least over a part of its length is spiraled in a thread-like manner.

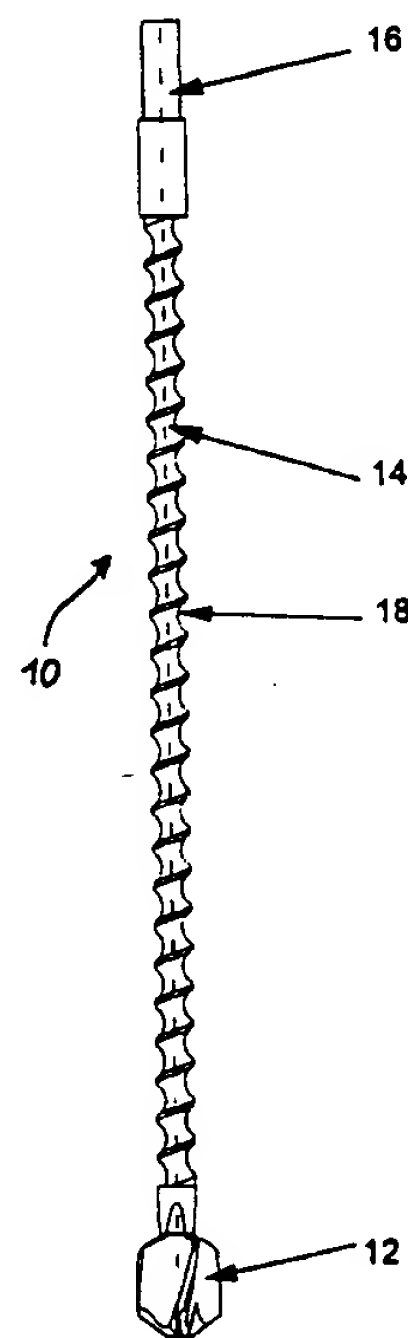


Fig. 1

**EP 0 895 754 A2**

## Description

[0001] The invention relates to a reaming tool for reaming bone canals according to the preamble of claim 1.

[0002] Such reaming tools are applied in tubular bones, for example with the femur for applying hip joint prosthesis or before driving in a bone nail for the femur, tibia, humerus, etc. From EP 0 508 710 there is known a reaming tool which consists of a drill head and an elongate shank which can be connected thereto. The drill head consists of four teeth arranged at a 90° distance with a chamfer which furthermore comprises a central through-bore. The shank which is likewise drilled through has a smaller diameter than the drill head. The central through-bore of the shank and drill head serves for accommodating a guiding wire along which the reaming tool is driven forward.

[0003] From EP 0 440 377 there is further known a reaming tool which comprises a modified drill head and a shank which is formed flexibly. With the help of the flexible shank which at the same time represents a flexible shaft the drill head may also be moved along an arcuate path, which is required in many cases. For such a flexible shaft there are various known designs. They must not only be flexible but also be able to transmit a suitable torque.

[0004] On application the chips removed away from the bone are conveyed behind the drill head into the intermediate space between the shank and the canal. With longer drillings it is therefore necessary to remove the tool from the canal from time to time in order to remove the chips. In this way the operating time is drastically increased. If the removal of the chips is not effected in time, a blockage of chips may occur with a corresponding blocking up of the drill head by which means an unallowable loading of the bone may occur, in particular by the developing heat.

[0005] It is therefore the object of the invention to provide a reaming tool for drilling bone canals with which the removal of chips is significantly improved.

[0006] This object is achieved by the features of claim 1.

[0007] With the reaming tool according to the invention the shank is at least over a part of its length spiraled in the manner of a thread. Preferably the spiraling extends over the whole length of the shank, at least over a length such that the spiraled section is still located outside the bone when the drill head is in its furthest driven in position.

[0008] Although the outer diameter of the spiraled shank for obvious reasons is clearly smaller than the outer diameter of the drill head it is possible with such a flexible shank to convey a sufficiently large part of the machined chips to the outside. Under certain circumstances all temporary removal of the drill head from the drilled out canal for the purpose of chip removal is done away with, however at least the number of such proce-

dures is limited to a minimum.

[0009] In order to prevent damage to the canal walling one formation of the invention provides for the thread tip to be flattened or rounded.

[0010] Although it is conceivable to form the shank of metal, it may be manufactured just as well from plastic.

[0011] One embodiment form of the invention is described in more detail by way of the drawings.

Fig. 1 schematically shows a reaming tool according to the invention.

Fig. 2 shows a detail of the reaming tool according to Fig. 1.

[0012] In Fig. 1 there is illustrated a reaming tool at 10. It comprises a drill head 12 which e.g. may be formed according to EP 0 508 710 or according to WO 97/03617. A flexible shank 14 is connected to the drill head 12. The connection is not shown in detail. It may be conventional. Preferably there is provided a releasable connection, so that e.g. a drill head with a changed diameter can be connected to the shank 14. At the free end of the shank 14 there is mounted a cylindrical clamping piece 16 for connecting the shank 14 to the chuck of a rotary tool, in particular a rotary drive machine, for example an electric or pneumatic motor.

[0013] As can be recognized from the drawing the shank 14 is spiraled in a helix-shaped manner as is shown at 18. The spiraling carried out in a thread-like or corkscrew-like manner is provided with an adequately deep groove so that in spite of an outer diameter of the shank 14 which is significantly smaller than that of the outer diameter of the drill head 12, chips which are conveyed from the drill head 12 rearwards are transported rearwards by the spiraling of the shank 14 to the clamping piece 16 which lies safely outside the bone.

[0014] The shank 14 is formed of metal or plastic and this being in a manner such that it can transmit the torque which is required for the reaming, but at the same time is flexible in order to function as a type of flexible shaft.

[0015] As becomes clear from Fig. 2 the tip of the threads is rounded or flattened as is indicated at 20. In this way on contacting or abutting the walling of the bone canal injuries are avoided.

[0016] As already previously quoted it is to be understood that the drill head 12 and the shank 14 comprise a through-bore for guiding through a guide wire which is not shown.

## Claims

1. A reaming tool for reaming bone canals with a drill head which is mounted on an elongate flexible shank which has a diameter smaller than that of the drill head and which can be connected to a rotary drive motor, wherein the drill head and shank comprise a through-bore for a guiding wire, character-

ized in that the shank (14) at least over a part of its length is spiraled (18) in a thread-like manner.

2. The reaming tool according to claim 1, characterized in that the thread tip (20) is rounded or flattened. 5
3. The reaming tool according to claim 1 or 2, characterized in that the shank (14) is of plastic or metal. 10

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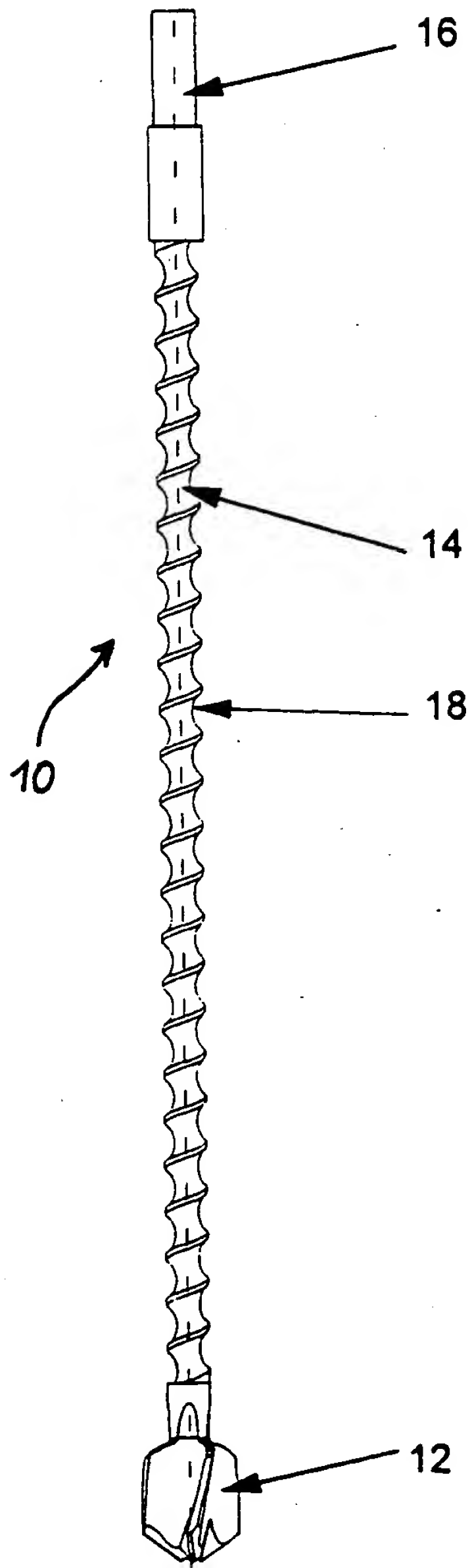


Fig. 1

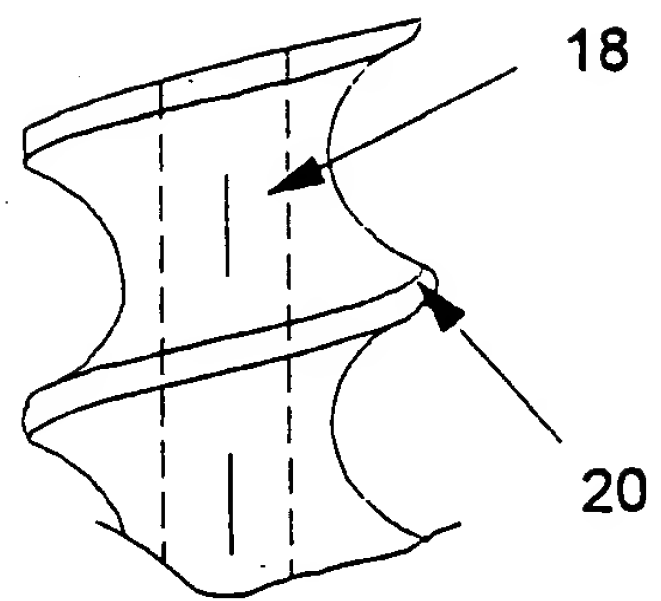


Fig. 2